

Ceres Analytical Laboratory, Inc.
4919 Windplay Dr., Suite 1
El Dorado Hills, CA 95762

October 9, 2015

Ceres ID: 10791

Apex Laboratories
Mr. Darrell Auvil
12232 S.W. Garden Place
Tigard, OR 97223

Enclosed please find the results for the one soil sample received on October 6, 2015. This sample was analyzed for tetra through octa chlorinated dioxins and dibenzofurans by EPA method 1613B. **Rush 4-day** turn-around time was provided for this work.

Sample results are reported on a dry weight basis.

This work was authorized under Apex Laboratories' Project # A5I0362.

The report consists of a Cover Letter, Sample Inventory (Section I), Data Summary (Section II), Sample Tracking (Section VI), and Qualifiers/Abbreviations (Section VII). Raw Data (Section III), Continuing Calibration (Section IV), and Initial Calibration (Section V) are available in a full report (.pdf format) upon request.

The Sample Tracking Section includes all external and internal chain of custodies, laboratory bench sheets, and any special instructions received.

If you have any questions regarding this report, please feel free to contact me at (916)932-5011.

Sincerely,



James M. Hedin
Director of Operations/CEO
jhedin@ceres-lab.com

Section I: Sample Inventory

<u>Ceres Sample ID:</u>	<u>Sample ID</u>	<u>Date Received</u>	<u>Collection Date</u> <u>&Time</u>
10791-001	SH-Composite	10/6/2015	9/14/2015 14:00

Section II: Data Summary



CERES Analytical Laboratory, Inc.

4919 Windplay Dr. Suite 1, El Dorado Hills, CA 95762

EPA Method 1613B

Quality Assurance Sample Method Blank	QC Batch #: 1371 Matrix: Soil Sample Size: 10.00 g	Date Received: NA Date Extracted: 10/6/2015 ZB-5MS Analysis: 10/7/2015
Project ID: A5I0362		

Analyte	Conc. (pg/g)	Qualifiers	Labeled Standards	% R	LCL-UCL (a)	Qualifiers
2,3,7,8-TCDD	DL= 0.140		13C-2378-TCDD	80.3	25-164	
12378-PeCDD	DL= 0.300		13C-12378-PeCDD	99.5	25-181	
123478-HxCDD	DL= 0.295		13C-123478-HxCDD	72.3	32-141	
123678-HxCDD	DL= 0.288		13C-123678-HxCDD	101	28-130	
123789-HxCDD	DL= 0.286		13C-1234678-HpCDD	88.5	23-140	
1234678-HpCDD	DL= 0.654		13C-OCDD	89.4	17-157	
OCDD	DL= 1.02		13C-2378-TCDF	84.2	24-169	
2,3,7,8-TCDF	DL= 0.146		13C-12378-PeCDF	88.6	24-185	
12378-PeCDF	DL= 0.152		13C-23478-PeCDF	94.7	21-178	
23478-PeCDF	DL= 0.159		13C-123478-HxCDF	72.5	26-152	
123478-HxCDF	DL= 0.199		13C-123678-HxCDF	91.5	26-123	
123678-HxCDF	DL= 0.176		13C-234678-HxCDF	85.1	28-136	
234678-HxCDF	DL= 0.225		13C-123789-HxCDF	80.7	29-147	
123789-HxCDF	DL= 0.348		13C-1234678-HpCDF	80.7	28-143	
1234678-HpCDF	DL= 0.430		13C-1234789-HpCDF	84.4	26-138	
1234789-HpCDF	DL= 0.660					
OCDF	DL= 1.05					
Totals	Conc. (pg/g)	EMPC	CRS			
Total TCDD	DL= 0.140		37Cl4-2378-TCDD	89.9	35-197	
Total PeCDD	DL= 0.300					
Total HxCDD	DL= 0.295					
Total HpCDD	DL= 0.654					
Total TCDF	DL= 0.146					
Total PeCDF	DL= 0.159					
Total HxCDF	DL= 0.348					
Total HpCDF	DL= 0.660					

DL - Signifies Non-Detect (ND) at sample specific detection limit.

EMPC - Estimated Maximum Possible Concentration due to ion abundance ratio failure.

(a) - Lower control limit - Upper control limit

(b) - TEQ based on (2005) World Health Organization (WHO) Toxic Equivalent Factors.

Total Toxic Equivalency (TEQ min.) (b): 0.0

Analyst: JMH

Reviewed by: BS



CERES Analytical Laboratory, Inc.

4919 Windplay Dr. Suite 1, El Dorado Hills, CA 95762

EPA Method 1613B

Quality Assurance Sample Ongoing Precision and Recovery Project ID: A5I0362	QC Batch #: 1371 Matrix: Soil Sample Size: 10.00 g	Date Received: NA Date Extracted: 10/6/2015 ZB-5MS Analysis: 10/7/2015
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Analyte	Conc. (ng/mL)	Limits (a)	Labeled Standards	% Rec.	Limits (a)
2,3,7,8-TCDD	9.74	6.7-15.8	13C-2378-TCDD	90.6	20-175
12378-PeCDD	45.8	35-71	13C-12378-PeCDD	105	21-227
123478-HxCDD	44.5	35-82	13C-123478-HxCDD	93.3	21-193
123678-HxCDD	53.4	38-67	13C-123678-HxCDD	101	25-163
123789-HxCDD	50.1	32-81	13C-1234678-HpCDD	104	26-166
1234678-HpCDD	49.4	35-70	13C-OCDD	109	13-198
OCDD	95.6	78-144	13C-2378-TCDF	91.4	22-152
2,3,7,8-TCDF	9.20	7.5-15.8	13C-12378-PeCDF	101	21-192
12378-PeCDF	48.1	40-67	13C-23478-PeCDF	103	13-328
23478-PeCDF	47.3	34-80	13C-123478-HxCDF	88.3	19-202
123478-HxCDF	53.7	36-67	13C-123678-HxCDF	99.0	21-159
123678-HxCDF	43.8	42-65	13C-234678-HxCDF	95.9	22-176
234678-HxCDF	47.4	35-78	13C-123789-HxCDF	93.0	17-205
123789-HxCDF	50.8	39-65	13C-1234678-HpCDF	95.0	21-158
1234678-HpCDF	49.2	41-61	13C-1234789-HpCDF	101	20-186
1234789-HpCDF	49.9	39-69			
OCDF	92.6	63-170			
			CRS		
			37Cl4-2378-TCDD	97.5	31-191
			(a) Limits based on method acceptance criteria.		

Analyst: JMH

Reviewed by: BS



CERES Analytical Laboratory, Inc.

4919 Windplay Dr. Suite 1, El Dorado Hills, CA 95762

Apex Laboratories
12232 S.W. Garden Place
Tigard, OR 97223

EPA Method 1613B

Client Sample ID: SH-Composite		
Project ID: A5I0362	Ceres Sample ID: 10791-001	Date Received: 10/6/2015
Date Collected: 9/14/2015	QC Batch #: 1371	Date Extracted: 10/6/2015
Time Collected: 2:00 PM	Matrix: Soil	ZB-5MS Analysis: 10/7/2015
	Sample Size: 11.80 g	Q-225 Analysis: NA
	% Solids: 83.8	

Analyte	Conc. (pg/g)	Qualifiers	Labeled Standards	% R	LCL-UCL (a)	Qualifiers
2,3,7,8-TCDD	DL= 0.171		13C-2378-TCDD	87.7	25-164	
12378-PeCDD	DL= 0.228		13C-12378-PeCDD	95.0	25-181	
123478-HxCDD	0.597	J	13C-123478-HxCDD	102	32-141	
123678-HxCDD	1.99	J	13C-123678-HxCDD	84.4	28-130	
123789-HxCDD	1.28	J	13C-1234678-HpCDD	105	23-140	
1234678-HpCDD	76.3		13C-OCDD	98.9	17-157	
OCDD	857		13C-2378-TCDF	89.4	24-169	
2,3,7,8-TCDF	DL= 0.294		13C-12378-PeCDF	92.8	24-185	
12378-PeCDF	DL= 0.233		13C-23478-PeCDF	89.2	21-178	
23478-PeCDF	DL= 0.606		13C-123478-HxCDF	86.9	26-152	
123478-HxCDF	0.927	J	13C-123678-HxCDF	86.3	26-123	
123678-HxCDF	0.434	J	13C-234678-HxCDF	91.2	28-136	
234678-HxCDF	0.699	J	13C-123789-HxCDF	91.9	29-147	
123789-HxCDF	DL= 0.278		13C-1234678-HpCDF	91.4	28-143	
1234678-HpCDF	6.77		13C-1234789-HpCDF	109	26-138	
1234789-HpCDF	DL= 0.737					
OCDF	24.2					
Totals	Conc. (pg/g)	EMPC	CRS			
Total TCDD	DL= 0.171		37Cl4-2378-TCDD	98.2	35-197	
Total PeCDD	DL= 0.228		DL - Signifies Non-Detect (ND) at sample specific detection limit. EMPC - Estimated Maximum Possible Concentration due to ion abundance ratio failure. (a) - Lower control limit - Upper control limit (b) - TEQ based on (2005) World Health Organization (WHO) Toxic Equivalent Factors.			
Total HxCDD	16.2					
Total HpCDD	156					
Total TCDF	0.921	1.27				
Total PeCDF	2.81					
Total HxCDF	10.0	10.8				
Total HpCDF	22.5					

Total Toxic Equivalency (TEQ min.) (b): 1.69

Analyst: JMH

Reviewed by: BS

Section VI: Sample Tracking

SUBCONTRACT ORDER

Apex Laboratories

A5I0362

KF10-5-15

10791

SENDING LABORATORY:

Apex Laboratories
12232 S.W. Garden Place
Tigard, OR 97223
Phone: (503) 718-2323
Fax: (503) 718-0333
Project Manager: Darrell Auvil

RECEIVING LABORATORY:

Ceres Analytical Laboratory, Inc
4919 Windplay Drive, Suite 1
El Dorado Hills, CA 95762
Phone : (916) 932-5011
Fax: -9

Sample Name: SH-Composite

Soil

Sampled: 09/14/15 14:00

(A5I0362-03)

Analysis	Due	Expires	Comments
1613B Dioxins and Furans (SUB)	09/21/15 17:00	03/12/16 14:00	RUSH, 4-5 day TAT
Containers Supplied: (B)4 oz Glass Jar			

Rush 4-5 day TAT

Released By 	Date 10/05/15	Received By 	Date 10/05/15 09:49
Released By 	Date	Received By	Date

Sample Receipt Check List

Ceres ID: <u>10791</u>		Date/Time: <u>10/6/15 09:49</u>
Client Project ID: <u>A5I0362</u>		Received Temp: <u>2.4</u> °C Acceptable: <u>Y</u> / N
Chain of Custody Relinquished by signed?		<u>Y</u> / N
Custody Seals?	Present?	Y / N
	Intact?	Y / N
	NA:	<u>NA</u>
Unlabeled / Illegible Samples		<u>Y</u> / N <u>10/6/15</u>
Proper Containers:		<u>Y</u> / N
Preservation Acceptable (Chemical or <u>Temperature</u>)?		<u>Y</u> / N
Drinking Water, Sodium Thiosulfate present?		Y / N <u>NA</u>
Aqueous sample pH: <u>NA</u>		
List COC discrepancies:		
<u>2 10/6/15</u>		
List Damaged Samples:		
<u>1 10/6/15</u>		

Ceres Analytical Laboratory

Process Request

Ceres ID: 10791 PB: 1371 Sample #: 1 Due Date: 10/12/15

Matrix (circle one): Drinking Water Aqueous Effluent Influent Ash

Solid Soil Sediment Sludge Clay/Clay Slurry Other: _____

Method (circle one):

☐ 1613 2,3,7,8-TCDD☐ 8290 2,3,7,8-TCDD☐ 1613 2,3,7,8-TCDD/F☐ 8290 2,3,7,8-TCDD/F☒ 1613 Cl₄-Cl₈☐ 8290 Cl₄-Cl₈

Instructions:

% Solids Calculations

Instructions:

1. Calibrate balance
2. Tare balance
3. Place empty Labeled weighing tin on balance. Record weight as Tin Wt.
4. Tare balance with weighing tin.
5. Add approximately 2-10 grams sample to weighing tin. Record weight as Sample Wet Wt.
6. After the sample has dried overnite, calibrate the balance.
7. Weigh dried sample and tin. Record weight as Sample and Tin Dry Wt.
8. Calculate % Solid as follows:

$$\% \text{ Solid} = \frac{\text{Sample and Tin dry weight} - \text{Tin weight}}{\text{Sample Wet Wt.}} \times 100$$

[illegible]

105Eg
11.93

Chemist: _____

Date: 10/6/15

Method: 16/3 B

SOP #: 381.1

Ceres Analytical Laboratory

Sample Prep Bench Sheet

Ceres Project ID: 10791

Preb Batch: 1371

[illegible]

Comments A OPR spiked with NSS.

DCM Shake: *NA*

Soxhlet Start: 15:30 10/6/15

Soxhlet Stop: 17:50 10/7/15

Samples Logged out by: J 10/1/15 11:34

Samples Returned by: 10/6/15 14:50

Note samples Depleted: *NA*

Sample Extracts Storage Location: Box 18

Extracts to Instrument: 11:50 10/7/15

Extracts returned to Storage Location: 8:15 10/8/56

Method: 8290A/1613B
SOP #: 302.1/301.1

Ceres Analytical Laboratory
Sample Prep Bench Sheet

Standard	Standard ID	Vol.	Expiration Date
ISS	5052815A	201	4/1/20
NSS	5050913H	201	5/9/17
CSS	5050913I	201	5/9/17
RSS	5062415A	201	4/1/20

Solvents/Solutions/Packing Materials

Name	Amount	Lot #	Exp. Date
Toluene	450ml	C15P12BLK	7/29/16
Hexane	30, 20, 100, 25, 20ml	C15C13BLK	7/29/16
Sigel	4g	P090215A	3/2/16
BasicGel	4g	P061915A	12/19/15
AcidGel	8g	P071615B	1/16/16
AcidAl	6g	P072915A	1/29/16
Na ₂ SO ₄	1.5 + 0.5g	P090815A	3/7/16
20% Decm:Hex	30ml	L091115A	3/10/16
Florisil	1.2g	P061915B	12/19/15
Decm	40ml	152744	7/1/16

Page 2 of 2

Section VII: Qualifiers/Abbreviations

J	Concentration found below the lower quantitation limit but greater than zero.
B	Analyte present in the associated Method Blank.
E	Concentration found exceeds the Calibration range of the HRGC/HRMS.
D	This analyte concentration was calculated from a dilution.
X	The concentration found is the estimated maximum possible concentration due to chlorinated diphenyl ethers present in the sample.
H	Recovery limits exceeded. See cover letter.
*	Results taken from dilution.
I	Interference. See cover letter.
Conc.	Concentration Found
DL	Calculated Detection Limit
ND	Non-Detect
% Rec.	Percent Recovery